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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/615,964	07/09/2003	Peter Anson	DWW-14908	1265

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EXAMINER

ISSING, GREGORY C

ART UNIT	PAPER NUMBER
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3662

DATE MAILED: 10/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/615,964

Applicant(s)

ANSON ET AL.

Examiner

Gregory C. Issing

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE three MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 9/22/03.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

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1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. In claim 1, the language "the null hypothesis" is indefinite since this has not been previously defined or determined. Thus, the step of selection of locations where the associated value exceeds a threshold representing the null hypothesis is also indefinite. This language is also in claim 16.

Claim 22 is indefinite due to the in clarity of the language of the claims which define a number of antennas "at infrequent intervals" as well as the number of antennas being "sufficiently large". It is not clear what limitation(s) is(are) provided since for a given search area the two would appear to be contradictory. The "covariance matrix" of step (c) is indefinite due to a lack of proper antecedent basis as well as not being previously determined or obtained. It is further not clear if this claim is directed to the same invention of the previous claims since in fact there is no transmitter detected. None of the means receive or measure any signal from a transmitter in the search area; the claim merely sets forth a number of antennas, a library of manifold vectors and an additional limitation on the number of claims. In response to this Office Action, applicant is required to conform the claim to the same subject matter, show how all of the independent claims are directed to the same invention or cancel such; otherwise a restriction may be required in the future.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. Claims 1-15 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wax et al (6,104,344) in view of Kuwahara (EP 0 932 049) and Michal et al ("Multiple Target Detection for an Antenna Array Using Outlier Rejection Method").

Wax et al disclose a method and system for determining location of a transmitter in a search area, i.e., a cellular phone within a cell. Wax et al disclose a calibration step that specifies a grid of possible locations in the search space, i.e. bins and sub-bins whose size and shape vary according to the environment and distance from a base station (meeting the specification of a grid of possible locations). A database of calibration bin signatures is stored along with their bin locations (meeting the library of manifold vectors). This information may then be used for location finding by measuring a signal covariance from a transmitter whose location is unknown, comparing the signal covariance with the signatures stored in the calibration table and selecting one or more likely locations that yield the best match. As the bin sizes and shapes may vary according to the environment and the distance from the base station, it would have been obvious to the skilled artisan to conform the bin/sub-bins to any desired size to achieve the desired resolution of accuracy and hence meet the scope of the grid spacing. The resulting achievement of accuracy is within the scope of the prior art. Wax et al also teach the performance of a singular value decomposition. Wax et al is directed to locating cellular phones. The use of CDMA technology in cellular phones is well-known and conventional and is the most dominant multiplexing technology therein at the time of the invention as shown by Kuwahara. The use of outlier rejection techniques to improve accuracy in a target detection scheme is shown to be well-known in the art as exemplified by Michal et al. Thus, it would have been obvious to the skilled artisan to further modify Wax et al by incorporating outlier rejection techniques to improve the position determination capabilities by removing values that have errors greater than a predetermined threshold.

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6. Claims 1-15 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmidt ("Multi-linear array Manifold Interpolation") in view of Michal et al ("Multiple Target Detection for an Antenna Array Using Outlier Rejection Method").

Schmidt teaches source location using an arbitrary array of sensors, a MUSIC algorithm that combines a covariance matrix with each of a manifold vector from a library. Grid spacing is described in Section A. Section III describes the accuracy of the interpolation algorithms associated with the spacing. Michal et al teach a multi-sensor array system which improves accuracy using outlier rejection techniques. It would have been obvious to a skilled artisan to modify Schmidt by incorporating the teachings of Michal et al to minimize the error in the interpolation values.

7. Claims 1-15 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugiura et al.

Sugiura et al disclose a wireless communication system method and system for detection of position of mobile radio stations. The method comprises a learning procedure and a position estimation procedure. In the learning procedure of the embodiment of Figure 10, a mobile device goes to predefined nodes and transmits signals. A plurality of base stations measure signal characteristics of the radio transmissions from the mobile device and using a neural network define a grid associating the measured values to the positions of the predefined nodes. Thus, a neural network specifies a grid of point locations as well as a manifold vector associated therewith. During the position estimation procedure, a mobile device at an unknown location transmits a signal that is received and measured at a plurality of base stations. The measurements are correlated with the information defined in the database of the neural network. A position estimate is based on the correlation. The grid point spacings are clearly a design choice dependent upon the required resolution. Moreover, once a value for an interpolated point is calculated, it also is added to the neural network. Thus, the grid spacings decrease as time proceeds.

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8. Claims 16-21 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Baum discloses a signature-based target identification and pattern recognition system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory C. Issing whose telephone number is 703-306-4156. The examiner can normally be reached on Monday - Thursday 6:00 AM- 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Tarcza can be reached on 703-306-4171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Gregory C. Issing  
Primary Examiner  
Art Unit 3662

gci